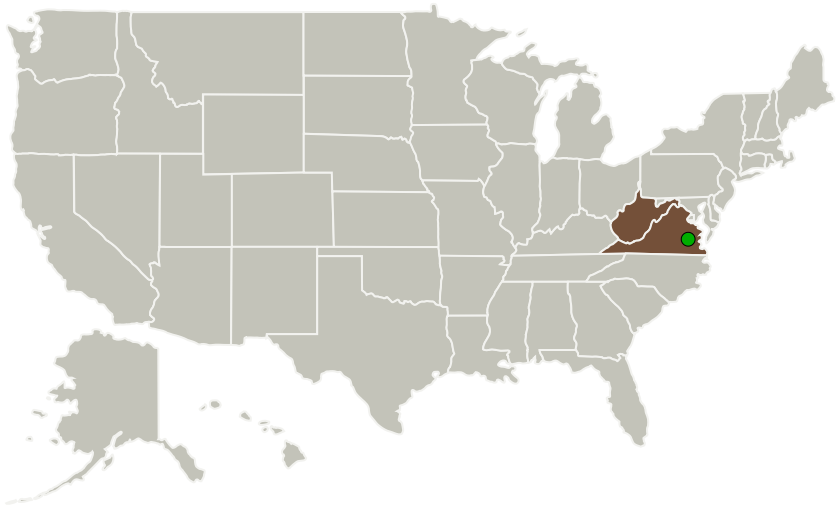
Metal Matrix Composite Feedstock for Advanced Fiber Placement Process, Phase I

Completed Technology Project (2013 - 2013)

Project Introduction

The proposed research pursues a path for reducing structural weight, increasing structural performance, and reducing fabrication cost while also minimizing maintainability. The approach, which is a based on selective reinforcement, is a change in the basic design philosophy and will result in the development of a hybrid material form. The selective reinforcement approach allows the structural design requirements to define the material form. This is the reverse of the typical development flow path used for building structures. This backward path results in more efficient material forms that are of greater value to structural engineers. Specifically, the proposed effort will combine a metal matrix composite (MMC) prepreg tape feedstock with an advanced fiber placement process. The combination of these technologies will lead to enhanced metallic structures through selective reinforcement (SR), which consists of adding a high-performance material to structures to achieve local stiffening and strengthening.

Primary U.S. Work Locations and Key Partners



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Organizations Performing Work	Role	Type	Location
Touchstone Research Laboratory, Ltd.	Lead Organization	Industry	Triadelphia, West Virginia
Langley Research Center(LaRC)	Supporting Organization	NASA Center	Hampton, Virginia

Primary U.S. Work Locations	
Virginia	West Virginia

Project Transitions

May 2013: Project Start

November 2013: Closed out

Closeout Documentation:

- Final Summary Chart*(https://techport.nasa.gov/file/138296)*

Images

Project Image
Metal Matrix Composite Feedstock for Advanced Fiber Placement Process
(https://techport.nasa.gov/image/135192)

Organizational Responsibility

Responsible Mission Directorate:
Space Technology Mission Directorate (STMD)

Lead Organization:
Touchstone Research Laboratory, Ltd.

Responsible Program:
Small Business Innovation Research/Small Business Tech Transfer

Project Management

Program Director:
Jason L Kessler

Program Manager:
Carlos Torrez

Principal Investigator:
Brian L Gordon

Co-Investigator:
Brian S Gordon

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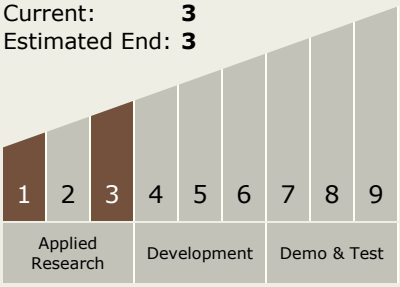
Technology Maturity (TRL)

Start: **1**
Current: **3**
Estimated End: **3**



Technology Areas

Primary:

- TX12 Materials, Structures, Mechanical Systems, and Manufacturing
  - TX12.1 Materials
    - TX12.1.1 Lightweight Structural Materials

Target Destinations

The Moon, Mars, Outside the Solar System, The Sun, Earth, Others Inside the Solar System